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Case Report

Laparoscopic treatment of recurrent ectopic pregnancy in the ipsilateral salpinx after ovulation induction and intrauterine insemination

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Abstract

Objective: To report a case of recurrent ectopic pregnancy in the ipsilateral salpinx after and intrauterine insemination treated by laparoscopy.
Case report: A 33-year-old woman with unexplained infertility sought evaluation at our hospital due to pelvic pain after ovulation induction and intrauterine insemination. She had a history of a right salpingectomy. Transvaginal ultrasonography did not reveal an intrauterine pregnancy, but showed a suspected extrauterine gestational sac on the operated adnexal area with free fluid in the pouch of Douglas. The patient was diagnosed with a recurrent ruptured ectopic pregnancy and an emergency laparoscopy was performed.
Conclusion: Recurrent ectopic pregnancy in the ipsilateral fallopian tube is rare, but it is important to be suspicious of the diagnosis to prevent serious morbidity. This case also demonstrates transtubal or transperitoneal migration of the gametes because ovulation and ectopic pregnancy occurred on opposite sides.

Keywords: intrauterine insemination; ipsilateral salpinx; laparoscopy; ovulation induction; recurrent ectopic pregnancy

Introduction

Ectopic pregnancy involves the implantation of an embryo outside of the endometrial cavity, with 98% occurring in the tubal epithelium. An ectopic pregnancy is a serious cause of maternal morbidity and mortality, with an incidence of 1–2% after spontaneous pregnancy and 2–5% after assisted reproduction technology treatments [1]. The incidence of recurrent ectopic pregnancy is reported to be between 6% and 28% [2]; however, recurrent ectopic pregnancy involving the same salpinx occurs rarely after salpingectomy [3]. A case of recurrent ectopic pregnancy in the proximal remnant of the right fallopian tube occurring after ovulation induction and intrauterine insemination (IUI) is presented here.

Case report

A 33-year-old gravida 1 para 0 presented to our infertility clinic with a 2-year complaint of secondary infertility. She had a history of a laparoscopic right salpingectomy 2 years ago in our hospital because of a 4-cm ampullary ectopic pregnancy after spontaneous conception. The infertility investigation demonstrated normal basal hormone levels, including follicle-stimulating hormone, luteinizing hormone, estradiol, prolactin, and thyroid stimulating hormone. Transvaginal ultrasonography on Day 3 of the menstrual cycle showed a normal uterus and endometrium with normal appearing ovaries. A hysterosalpingography showed a right proximal tubal occlusion because of a prior salpingectomy. The husband's sperm analysis was also normal. The patient was diagnosed with unexplained infertility, therefore, ovulation induction with gonadotrophins and IUI was selected as the treatment. Ovulation induction began on the second menstrual day with 75 IU/day recombinant follicle-stimulating hormone (Puregon; Merck Sharp & Dohme, Istanbul, Turkey). Transvaginal

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folliculometry on Day 10 revealed two dominant follicles measuring 17 mm and 19 mm on the left ovary. There were no follicles on the right ovary and the endometrium measured 9 mm with a triple line appearance. Recombinant human chorionic gonadotropin (hCG, Ovitrelle, 250 mcg; Merck Serono Pharmaceutical Company, Istanbul, Turkey) was injected for the final oocyte maturation and IUI was performed 36 hours later with 28 million post-washed motile sperm. Two weeks later, the serum β-hCG level was 245 mIU/mL, which increased to 627 mIU/mL 2 days later. The β-hCG level was 8.818 mIU/mL 2 weeks later and transvaginal ultrasonography did not reveal an intrauterine gestational sac, but showed a suspected ectopic gestational sac on the right adnexal area with free fluid in the pelvis. The clinical examination revealed mild abdominal pain with stable vital signs. The patient was diagnosed with a recurrent ruptured ectopic pregnancy; thus emergency laparoscopy was performed.

At laparoscopy there was free blood in the pelvic cavity, and on the right salpingeal stump, a ruptured ectopic pregnancy was noted (Fig. 1). There was a corpus luteum located on the left ovary. The salpingeal stump was removed with the products of conception. The pelvic cavity was washed with saline solution and the operation was ended. The diagnosis was confirmed by histopathological examination. The postoperative course was uneventful and she was discharged on the next day.

Discussion

Recurrent ectopic pregnancy on the same fallopian tube after salpingectomy is rare. Indeed, only 10 cases have been reported [3]. However, this is believed to be the first case occurring as a result of ovulation induction and IUI. Strauss and Kuemper [4] reported a woman who had an ectopic pregnancy involving the proximal remnant of the salpinx after *in vitro* fertilization (IVF) with oocyte donation; however, the patient did not have a history of ectopic pregnancy. Rather, she had bilateral salpingectomies for hydrosalpinges, which is a well-known condition that reduces IVF success.

Ipsilateral recurrent ectopic pregnancy may occur in the proximal or distal remnant of the operated tube. Chou et al [5] reported two cases of recurrent ipsilateral ectopic pregnancies; one involving the proximal end, and the other involved the distal end. In the first case, the ectopic sac was located on the proximal remnant of the tube, and the corpus luteum was located on the opposite side. This case was similar to our case in which we demonstrated that there were no active follicles developing on the side of the ectopic pregnancy at the time of ovulation induction, and at laparoscopy we confirmed that the corpus luteum was on the opposite site. These observations may substantiate the idea that a fertilized ovum may migrate from the intact left fallopian tube across the endometrial cavity to the opposite side where the proximal salpingeal stump is located. This process is referred to as internal migration of the fertilized ovum. Another explanation for the anatomical location of the ectopic pregnancy presented here may be the transperitoneal migration of an ovum from the contralateral ovary to the opposite salpinx via the pouch of Douglas. Transperitoneal embryo or ovum migration has been described previously in humans [6,7] and animals [8]. These findings suggest that normal tubo-ovarian integrity is not essential for pregnancy to occur. The possible paths that the gametes or the fertilized ovum can travel are illustrated in Fig. 2.

Recurrent ectopic pregnancy can also occur on the distal remnant of a fallopian tube. Chou et al [5] and Zuzarte et al [9] reported two cases of recurrent ectopic pregnancies occurring on the distal remnant of the fallopian tube. In both of these cases, the ectopic pregnancy sides and the ovulation sides were ipsilateral. Chou et al [5] and Zuzarte et al [9] postulated that a connection between the interstitial proximal portion and the distal remnant of the fallopian tube may allow the migration of spermatozoa from the endometrial cavity to the

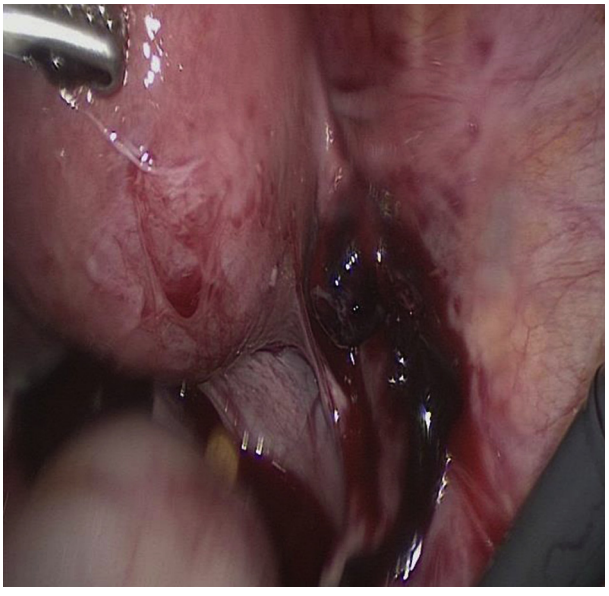

Fig. 1. Laparoscopic image of ruptured ectopic pregnancy on the right tubal stump.

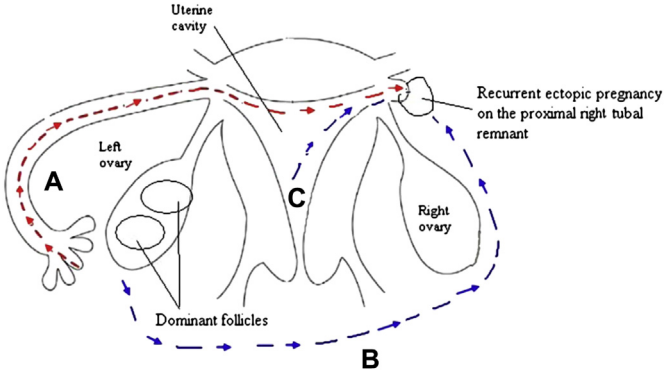

Fig. 2. Schematic presentation of the possible paths that ovum, sperm, or the fertilized ovum may travel. (A) Transtubal passage of the fertilized ovum to the contralateral fallopian tube. (B) Transperitoneal migration of the ovum to the contralateral tubal stump. (C) Passage of the spermatozoa to fertilize the ovum in the proximal tubal remnant.

distal end of the tube. A second explanation involves the migration of spermatozoa from the opposite intact fallopian tube through the pouch of Douglas to the distal remnant. Three consecutive ectopic pregnancies on the same fallopian tube have also been reported [10]. In this particular case, the patient had a partial salpingectomy in the first operation and tubal stump excisions in the next two operations within a period of 14 months. These cases confirm that leaving the proximal and distal remnants of the fallopian tube may be an additional risk factor for a recurrent ectopic pregnancy.

In conclusion, the case presented here and the others reported in the literature suggest that although recurrent ectopic pregnancy on the ipsilateral tube is a rare event, clinicians must be aware of this situation to avoid serious complications. Additionally, ovulation induction and IUI, like IVF, may also be an additional risk factor for ectopic pregnancy.

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